

Evaluation of Farms Management as A method of Control of Bovine Mastitis in Sudan

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ABSTRACT

This study was carried out to evaluate the role of management system as a method for control of mastitis in cattle dairy farms in Khartoum state. The study based on information obtained from interviews and observation. These included: variety of management systems, keeping exotic, crossbred or indigenous cattle, water and feeding regimes. This study concluded that the management system especially the farm hygiene has its big role in controlling mastitis in cattle.

INTRODUCTION

The Sudan is the largest country in Africa and it has a population of more than 36 million people. (UN, 2004). Sudan is situated in the north-eastern part of Africa and the climatic nature ranges from the Sahara desert in the north to tropical rain forest in the south. The majority of the population lives in the central part of the country, mainly in and around the capital, (Landguiden, 2005). Considerable numbers of people also live in the southern, western and eastern parts of Sudan. (Malik, 2005). Cows and goats are the most important species involved in milk production; together they provide nearly 90% of the milk output. Disease prevention has to be adjusted to the management system and the disease pattern in the herd (Payne and Wilson, 1999). The ways available to protect livestock from infectious diseases are by increasing the host's defense and by preventing the animals from meeting the contagion. Through breeding regimes, animals have become more tolerant or even resistant to some diseases. Generally, by providing good hygienic conditions, the disease pressure can be diminished (Payne and Wilson, 1999). By proper management of the grazing environment, many parasitic diseases can be controlled. In a housed environment, other ways of spreading diseases has to be taken into consideration, many animals then have close contact in a limited area, the walls and floors may harbour infectious agents. Control of diseases also involves vaccination, vector control (e.g.dipping) and for young animals by securing colostral immunity (Bo Algers *et al.*, 2009).

The farming system by itself is a major factor determining the health problems of dairy cattle and other aspects of their welfare, partly through housing and equipment and partly through management and handling practices, inadequate ventilation is highly ranked in the case of indoor systems but values of risk are very different and much higher in the case of tie-stalls. Light level and duration have a very low risk probability and magnitude values when compared with other hazards. Poor air quality was rated as a hazard with a large magnitude of the adverse effect in all types of indoor housing and the risk or hazards associated with housing/environment conditions have much lower magnitude of the adverse effect than for cows housed indoors. The largest risk estimates for cows at pasture for behavioral problems were associated with inappropriate temperature and humidity (in particular when there is no shelter), lack of handling facilities and problems with the milking parlour and waiting areas. (Bo Algers *et al.*, 2009). The objective of this research was to evaluate the impact of management system on the occurrence of mastitis in the examined dairy herd.

MATERIALS AND METHODS

Five hundred dairy cows were examined in 43 farms in Khartoum state in Falasteen, Eltebna, Hilat Kuku, Shambat, Elsamrab, Elhalfaia and farm of University of Khartoum. A screening test was applied by use pH indicator (Manufactured by Kruse company in Denmark) to diagnose the presence of mastitis in the examined herd. Apparent clinical mastitis was determined according to known clinical symptoms (Radostits, 1994).

Data from the farms were collected through interviews and by making observations to all 43 visited farms. The questionnaire concentrated on the farm system, number of farms, wash of udder and hands before milking, use of antiseptic for teat dipping, these together with other questions concerning the various other aspect of the farms. The person interviewed was a member of the staff on each farm. Observations were done during visiting the farms, to receive information not likely to be gained from the interviews.

RESULTS

The total size of herds in examined farms varied from 35 to 200 cows. The farmers responded highly to the questionnaire regarding general farm data. The system applied was mainly the semi-intensive system. The ventilation was satisfactory in all farms while in two farms was excellent. Drainage system was satisfactory in all farms except one farm which was poor. Farm housing materials were a mixture between ones. Type of floor ranged between earth and concrete (Table (1). Table (2) revealed the number of samples, which were collected, area of collection and cow's breed, number of calving, type of inflammation and milk changes, main changes in milk samples (blood, shreds, viscosity and change in colour). Table (3) revealed the percentage of hygienic practices before milking in farms. The percentage of non practicing farms for all types of hygiene was higher than the percentage of practicing farms.

Table (1): General farm hygiene, ventilation, drainage system, housing type, building material and floor type

<i>Farm's name</i>	<i>Farm's system</i>	<i>Ventilation</i>	<i>Housing type</i>	<i>General farm hygiene</i>	<i>Drainage system</i>	<i>Building material</i>	<i>Floor type</i>
<i>Falasteen</i>	<i>Open</i>	<i>Satisfactory</i>	<i>Free stall and Pen</i>	<i>Satisfactory</i>	<i>Satisfactory</i>	<i>Traditional</i>	<i>Earth</i>
<i>Eltebna</i>	<i>Semi-intensive</i>	<i>Excellent</i>	<i>Stanchion</i>	<i>Satisfactory</i>	<i>Satisfactory</i>	<i>Mixture</i>	<i>Concrete</i>
<i>Hilat Kuku</i>	<i>Semi-intensive</i>	<i>Satisfactory</i>	<i>Free stall and Pen</i>	<i>Poor</i>	<i>Satisfactory</i>	<i>Traditional</i>	<i>Earth</i>
<i>Elhalfaia</i>	<i>Semi-intensive</i>	<i>Satisfactory</i>	<i>Free stall and Pen</i>	<i>Satisfactory</i>	<i>Satisfactory</i>	<i>Mixture</i>	<i>Earth</i>
<i>Elsamrab</i>	<i>Open</i>	<i>Satisfactory</i>	<i>Free stall and Pen</i>	<i>Satisfactory</i>	<i>Satisfactory</i>	<i>Mixture</i>	<i>Earth</i>
<i>The University</i>	<i>Semi-intensive</i>	<i>Excellent</i>	<i>Stanchion and pen</i>	<i>Satisfactory</i>	<i>Satisfactory</i>	<i>Mixture</i>	<i>Earth</i>
<i>Shambat</i>	<i>Open</i>	<i>Poor</i>	<i>Free stall</i>	<i>Poor</i>	<i>Poor</i>	<i>Traditional</i>	<i>Earth</i>

Excellent: International Required Standard. Satisfactory: Modered International Required Standard. Poor: Absent of International Required Standard.

Table (2): The number of collected samples, area of collection and cow's breed, number of calving, type of inflammation and type of milk changes

Farm's name	No. of milk sample	Area	Cow's breed	No. of calving	Type of inflammation	Milk changes
Eltebna	4	Bahry	Mixture	2-4	Acute and chronic	Blood, shreds, Change in colour and viscosity
Elhalfaia	22	Bahry	Mixture	2-4	Acute and chronic	Clots and shreds, Change in colour and viscosity
Elsamrab	20	Bahry	Mixture	3-4	Acute and chronic	Blood and Change in colour and viscosity
Shambat	12	Bahry	Mixture	4	Acute and chronic	Shreds and Change in colour
The University	36	Bahry	Mixture	2-4	Acute, chronic and gangrenous	Shreds, clots and blood, change in colour and viscosity
Hilat Kuku	3	Bahry	Mixture	4	Acute and chronic	Clots, shreds and flakes
Falasteen	3	Omdurman	Mixture	3-4	Chronic	Clots, flakes and shreds

Table (3): Percentage of hygienic practices in dairy farms

<i>Practice of hygienic type</i>	<i>No. of practicing farms</i>	<i>Percentage</i>	<i>No. of non practicing farms</i>	<i>Percentage</i>
Hand wash before milking	13	30%	30	70%
Treatment of mastitic cases	12	27.9%	31	72.1%
Udder wash	10	23.2%	33	76.7%
Check fore milk	4	9.3%	39	90.7%
Teat dip antiseptic	3	6.9%	40	93%
Dry cow therapy	2	4.6%	41	95%
Apply teat lubricant	2	4.6%	41	95%

DISCUSSION

Mastitis plays a very important role in human health and animal health (Kromber and Grabowski, 2002). This study was conducted in Omdurman and Khartoum North dairy farms because these two are considered as the largest centre for milk production and marketing. Mastitis is a complex disease caused by several microorganisms (Sandholm *et al.*, 1995) and still it's the most important problem in dairy industry (Dodd 1985; Fetrow and Mann, 1991). Three forms of mastitis were detected during this study: acute, chronic and gangrenous mastitis. These types were also observed previously in dairy farms in Sudan (Ahmed, 2003). Most of the surveyed farms were small, so problems of ventilation and drainage have been clearly observed. Most dairy farms building materials were traditional made of mud, wood with old iron sheets for the door. These traditional building may cause an injuries on the udder and teat and hence predispose for mastitis. The floor surfaces were clear hazards to the animals. Mud and excessive moisture increase coliform organisms contaminating the udder. (William, 1995). The age plays an important role in cows infected with mastitis. Bagadi, (1974), Kehrl *et al.*, (1982), Dulin *et al.*, (1988), and Radostits *et al.*, (1994) found that older cows, especially after four calving are more susceptible to mastitis than others. The higher prevalence of clinical mastitis with increasing age has been reported. (Kalra and Dhanda, 1967; Sharma and Rai, 1977 and Hamir *et al.*, 1978). The milk machine is more risky than hand milking and calf suckling. (Hamman *et al.*, 1991). Knowledge about post milking teat dipping using of disinfectants for cleaning udder, hands, utensils and dry cow therapy were generally missing from large numbers of farms. These points have been frequently emphasized worldwide (Schroeder, 2010). In several occasions the milkers washed their hands only by water and these cannot release all microorganisms from hands (Bushnell, 1979). This study revealed a clear relationship between farm system and the level of hygiene in reducing the incidence of mastitis, this in accord with findings of Jones, (2009) and Schroeder, (2010).

On conclusion this study revealed that various hygiene management which should be restrictly implemented to improve the control of mastitis in dairy farms.

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